AutoVue® Lane Departure Warning (LDW) System by Bendix CVS

1.0 DESCRIPTION

The AutoVue® Lane Departure Warning (LDW) System by Bendix CVS gives drivers the ability to combat lane drift related to: drowsiness/fatigue, distractions, and adverse/unfavorable weather conditions.

At speeds above 37 mph (60 kmph), the AutoVue system tracks visible lane markings including both solid and dashed shoulder lines, center lines, and lines between lanes.

When an unexpected lane change takes place – a lane change without an activated turn signal – the system alerts the driver to make a correction.

⚠ WARNING

The AutoVue LDW system is intended only as an aid for a conscientious and alert driver. It may not provide any warning of unintended lane departures under certain conditions. Do not rely solely on the system to safely operate the vehicle. It does not warn of all possible hazards. For example, the system cannot help prevent an accident if the driver is impaired or not driving safely.

Ultimate responsibility for the safe operation of the vehicle remains with the driver at all times.

1.1 SYSTEM COMPONENTS

The system components include a digital camera mounted near the middle of the windshield inside the cab, an enable/disable switch (typically with status lamps), a driver alert system (speakers and/or a vibrating seat), and a central processing unit in the overhead console.

Some vehicles connect the AutoVue system to the vehicle's telematics communication system *(See Appendix A: Bendix™ SafetyDirect® system)*.

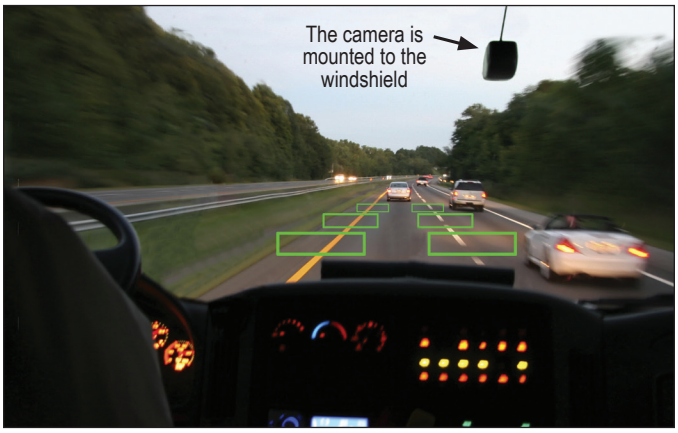

FIGURE 1 - *AUTOVUE® LDW SYSTEM (BOXES ADDED TO ILLUSTRATE ACTIVE LANE DETECTION)*

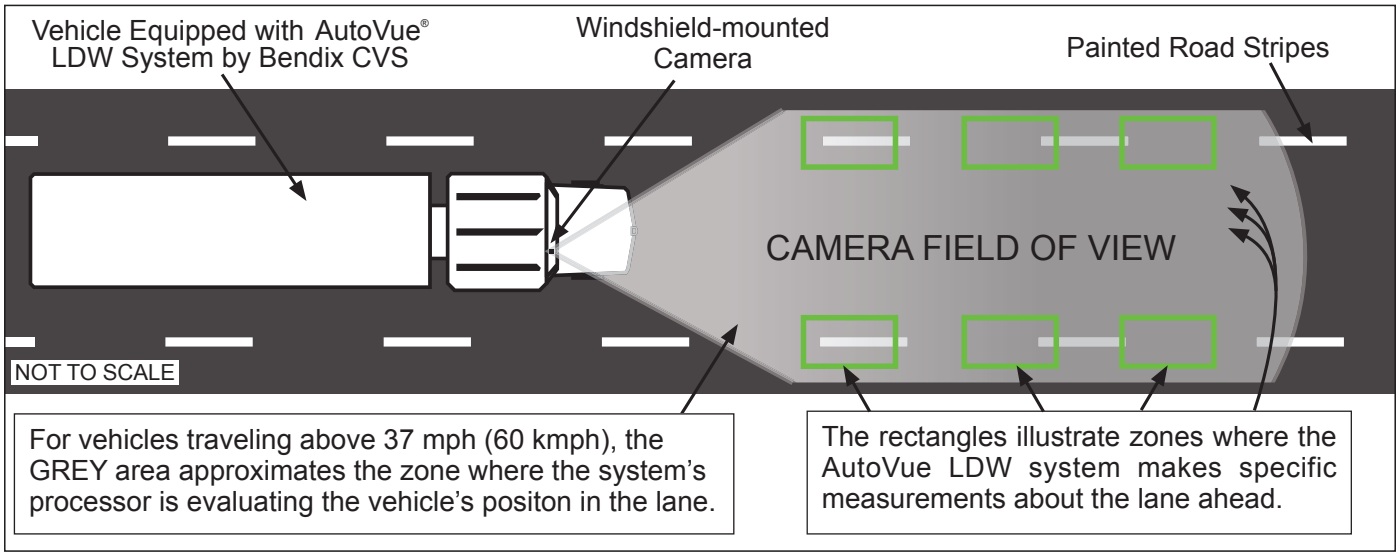
Vehicle Equipped with AutoVue® LDW System by Bendix CVS
Windshield-mounted Camera
Painted Road Stripes
CAMERA FIELD OF VIEW
NOT TO SCALE
For vehicles traveling above 37 mph (60 kmph), the GREY area approximates the zone where the system's processor is evaluating the vehicle's positon in the lane.
The rectangles illustrate zones where the AutoVue LDW system makes specific measurements about the lane ahead.

FIGURE 2 - *AUTOVUE® LDW SYSTEM BY BENDIX CVS - OPERATIONAL VIEW*

GENERAL SAFETY GUIDELINES

WARNING! PLEASE READ AND FOLLOW THESE INSTRUCTIONS TO AVOID PERSONAL INJURY OR DEATH:

When working on or around a vehicle, the following guidelines should be observed AT ALL TIMES:

- ▲ **Park the vehicle on a level surface, apply the parking brakes and always block the wheels. Always wear personal protection equipment.**
- ▲ **Stop the engine and remove the ignition key when working under or around the vehicle. When working in the engine compartment, the engine should be shut off and the ignition key should be removed. Where circumstances require that the engine be in operation, EXTREME CAUTION should be used to prevent personal injury resulting from contact with moving, rotating, leaking, heated or electrically-charged components.**
- ▲ **Do not attempt to install, remove, disassemble or assemble a component until you have read, and thoroughly understand, the recommended procedures. Use only the proper tools and observe all precautions pertaining to use of those tools.**
- ▲ **If the work is being performed on the vehicle's air brake system, or any auxiliary pressurized air systems, make certain to drain the air pressure from all reservoirs before beginning ANY work on the vehicle. If the vehicle is equipped with a Bendix® AD-IS® air dryer system, a Bendix® DRM™ dryer reservoir module, or a Bendix® AD-9si™ air dryer, be sure to drain the purge reservoir.**
- ▲ **Following the vehicle manufacturer's recommended procedures, deactivate the electrical system in a manner that safely removes all electrical power from the vehicle.**
- ▲ **Never exceed manufacturer's recommended pressures.**
- ▲ **Never connect or disconnect a hose or line containing pressure; it may whip. Never remove a component or plug unless you are certain all system pressure has been depleted.**
- ▲ **Use only genuine Bendix® brand replacement parts, components and kits. Replacement hardware, tubing, hose, fittings, etc. must be of equivalent size, type and strength as original equipment and be designed specifically for such applications and systems.**
- ▲ **Components with stripped threads or damaged parts should be replaced rather than repaired. Do not attempt repairs requiring machining or welding unless specifically stated and approved by the vehicle and component manufacturer.**
- ▲ **Prior to returning the vehicle to service, make certain all components and systems are restored to their proper operating condition.**
- ▲ **For vehicles with Automatic Traction Control (ATC), the ATC function must be disabled (ATC indicator lamp should be ON) prior to performing any vehicle maintenance where one or more wheels on a drive axle are lifted off the ground and moving.**
- ▲ **The power MUST be temporarily disconnected from the radar sensor whenever any tests USING A DYNAMOMETER are conducted on a Bendix® Wingman® Advanced™-equipped vehicle.**
- ▲ **You should consult the vehicle manufacturer's operating and service manuals, and any related literature, in conjunction with the Guidelines above.**

WARNING

Due to the inherent limitations of image recognition technology, the lane departure warning (LDW) technology — on rare occasions — may not be able to detect or may misinterpret lane markings. At these times, alerts may not occur, or erroneous alerts may occur.

IMPORTANT: It is the responsibility of the driver to remain vigilant and change driving practices depending on traffic and road conditions.

WARNING

Bendix active and supportive safety technologies, including AutoVue® LDW, do not replace the need for safe drivers. No commercial vehicle safety technology replaces the most important safety component of all – a skilled, alert professional driver exercising safe driving habits, as well as continuous, comprehensive driver training.

Ultimate responsibility for the safe operation of the vehicle remains with the driver at all times.

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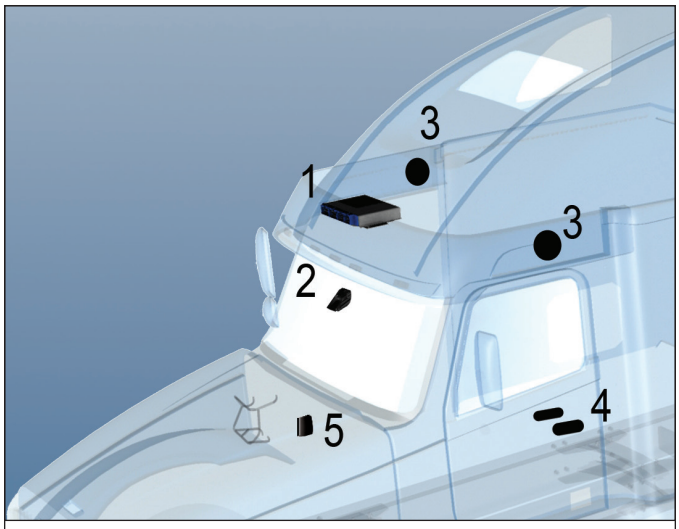


Typical System Components

Key	Description
1.	Lane Departure Warning (LDW) processor
2.	Camera with windshield bracket
3.	Two 3½-inch speakers with covers (optional)
4.	Two vibrating seat motors (optional)
5.	Dash-mounted enable/disable switch

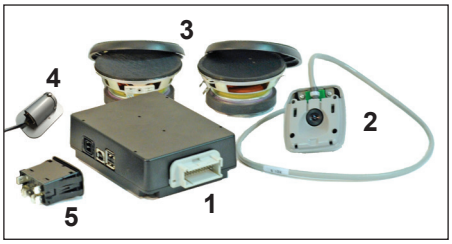


FIGURE 3 - *AUTOVUE® LDW SYSTEM BY BENDIX CVS*

See Figure 3 for a list of the typical components used for AutoVue® LDW systems by Bendix CVS.

The system uses speakers to emit a distinctive “rumble strip” sound on the appropriate side, (or optional vibration from the left or right portions of the driver’s seat alert if a non-audible warning is preferred).

The AutoVue LDW system is optimized to reduce false alarms, however the driver may temporarily use the enable/disable switch to silence multiple occurrences.

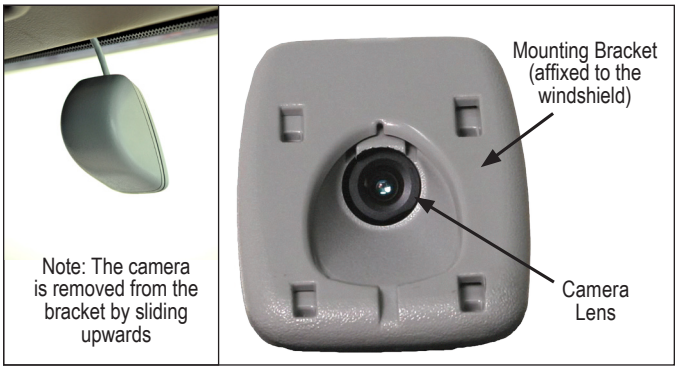


FIGURE 4 - *AUTOVUE® CAMERA*

The AutoVue LDW system has two lamps: an amber status lamp, and a green enable/disable lamp. There is also a switch to permit the driver to temporarily disable the system. Some vehicles have the lamps and switch combined. *See Figure 5 below.*

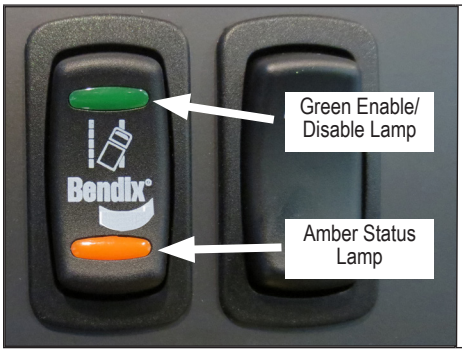


FIGURE 5 - *EXAMPLE OF AN AUTOVUE SYSTEM SWITCH.*

The design will vary by vehicle OEM. The switch and lamps may be separate.

2.0 SYSTEM OPERATION: WHAT TO EXPECT WHEN USING THE AUTOVUE® LDW SYSTEM BY BENDIX CVS

	What to Expect in Normal Operating Conditions			
	Situation	**Green Enable/Disable Lamp**	**Amber Status Lamp**	**Typical System Actions**
At Start-Up	Self-test at power-up.	On and remains illuminated.	On and remains illuminated.	Starting the vehicle supplies power to the system. At start-up, the system performs a self-test, then sounds two chirps through [first the left, then the right] the speakers. For vehicles which have systems with vibrating seat motors, the same sequence is followed to indicate the system is ready. Once the vehicle is running and the system is ready, the green ENABLED lamp and amber STATUS lamp illuminate.
	Driver may test the enable/ disable switch: press ONCE.	Lamp off.	Lamp off.	None.
	Driver may test the enable/ disable switch: press AGAIN.	Lamp illuminates.	Lamp illuminated.	None.
On the Road	**Active system Diagnostic Trouble Code (DTC) is present.**	**Lamp off.**	**Lamp illuminated.**	**System disabled. (Awaits system service)**
	Vehicle exceeds 37 mph (60 Kmph), lane markings on both sides are being tracked, and there are no active system DTCs.	Lamp remains illuminated.	Lamp off.	None. **(System is now active).**
	(***With turn signal ON***) Driver changes lanes.	Lamp remains illuminated.	Lamp off.	None.
	(***Without turn signal***) Driver drifts out of lane/changes lanes.	Lamp remains illuminated.	Lamp off.	**The speaker on the side of the vehicle towards which it is moving/ drifting will emit a "rumble strip" sound.** (If installed, driver's seat vibration will also/instead be activated.)
	Vehicle slows to 37 mph (60 Kmph), or below, and/or one or both lane markings are no longer able to be tracked by the system.	Lamp remains illuminated.	Lamp illuminated.	None (system is NOT active).
	Driver temporarily disables the system by pressing the disable switch (for example, construction areas with poorly marked lines may cause multiple false alerts.)	Lamp off.	Lamp off.	The system will automatically re-enable after 15 minutes.

FIGURE 6 - ***OPERATIONAL SCENARIOS WITH THE AUTOVUE LDW SYSTEM***

2.1 POTENTIAL FALSE AND MISSED ALERTS

In certain unusual traffic or roadway conditions, the AutoVue® LDW system by Bendix CVS may issue a false alert.

Drivers should take into account the road conditions, and any other factors they are encountering, as they choose how to react to any alerts they receive from the AutoVue LDW system.

Overview of Potential Issues	
Issue	**Description**
A system Diagnostic Trouble Code (DTC) is present.	If the AutoVue® LDW system finds a problem at power-up or during operation, it will set a DTC and will disable the system. **The amber lamp will be ON, and the green lamp OFF.** Use J1939 detection software to find the DTC code. Go to the *Troubleshooting Section* (page 7) to find the recommended repair.
System cannot discover right and left lane markings.	• Mis-installed camera (incorrect placement, **not level**, loose, etc. See page 6 for full details of camera installation specifications.) Note: When re-mounting a camera bracket, use Bendix windshield adhesive - p/n 493088201 - do not use substitutes. • Road markings are hard to see (faded/missing lane markings, standing water, snow, or mud/sand/dirt/debris on the road). • Inclement weather (heavy rain, fog, snow, smoke, ice or sleet, etc. is blocking the lane markings). • Camera's view is not clear (glass not clean, chipped or cracked, not installed where the windshield wiper cleans the glass, other distortion). • Headlight(s) are not operating or are mis-aimed. • Sun glare or other light source blinds the camera, obscures the lane markings, or makes other road markings (e.g. tar strips) look like lane markings.

FIGURE 7 - *EXAMPLES OF POTENTIAL ISSUES*

NOTE: These are potential situations and responses that might occur when using the AutoVue LDW system. All possible situations and responses are not covered here.

2.2 SETTING DIAGNOSTIC TROUBLE CODES

The AutoVue LDW system is self-monitored and if any malfunction is detected, a Diagnostic Trouble Code (DTC) will be set and the driver will be alerted by the amber status lamp being illuminated, and the green enabled lamp will be OFF. See the *Troubleshooting Section* (page 7), for more information.

2.3 MAINTENANCE

In normal use, the AutoVue LDW system needs only a clean, properly maintained windshield to ensure a clear view of the road ahead.

2.4 CAMERA AND ECU INTERCHANGEABILITY

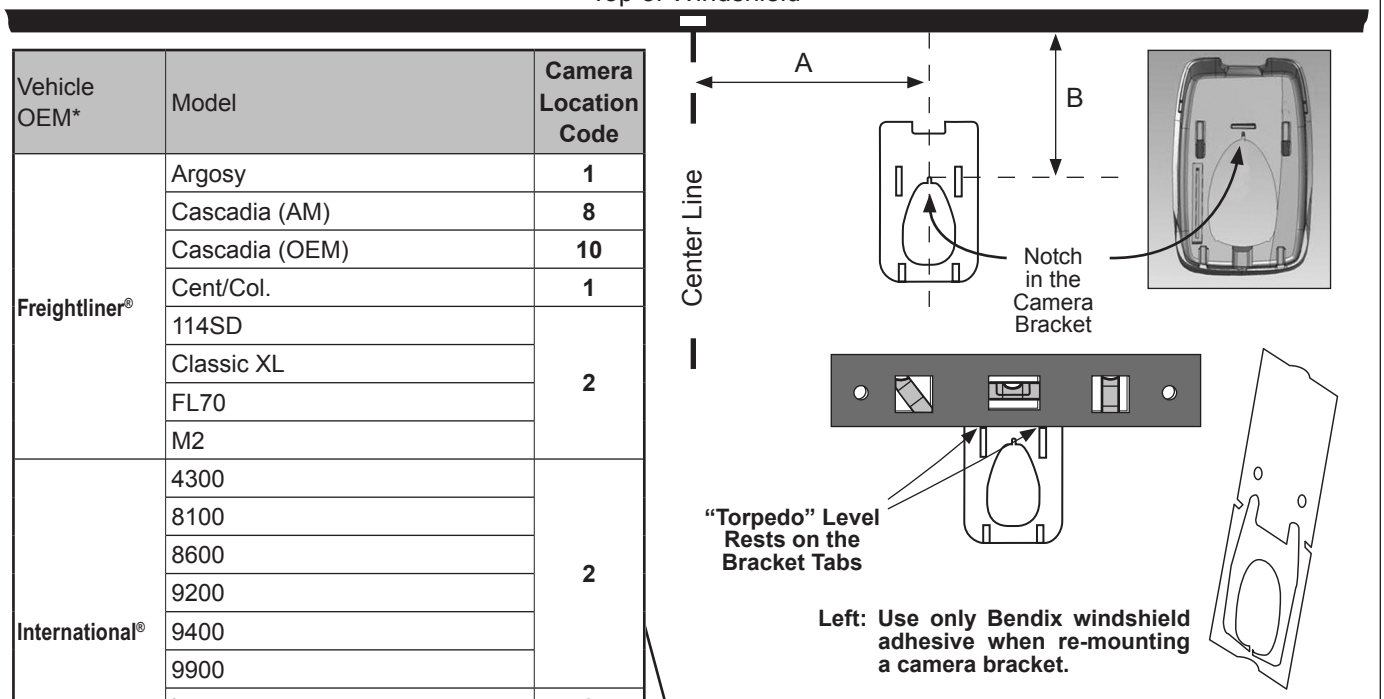
AutoVue LDW systems are vehicle make and model specific. Each part number is customized to a windshield configuration and offset. When troubleshooting, or when replacing cameras or Electronic Control Units (ECUs), only use replacements with the same part number (or a direct superceding replacement number supplied by Bendix).

2.5 ALERT VOLUME

Audible alert levels are pre-set at the factory and can not be turned off, nor can the volume be adjusted.

2.6 WINDSHIELD MOUNTING INFORMATION

Vehicle OEM*	Model	Camera Location Code
Freightliner®	Argosy	**1**
	Cascadia (AM)	**8**
	Cascadia (OEM)	**10**
	Cent/Col.	**1**
	114SD	**2**
	Classic XL	
	FL70	
	M2	
International®	4300	**2**
	8100	
	8600	
	9200	
	9400	
	9900	
	Lonestar	**9**
	Pro Star	**2**
	Workstar/7000 Series	
Kenworth®	T2000	**2**
	T600/800	**3**
	T600/800 Flt Wndshld	**7**
	T660	**3**
	T680	**9**
	T700	**2**
Mack®	Pinnacle	**2**
	Vision	
Peterbilt®	378	**2**
	379	
	385	
	386	
	389	
	340 Car Hauler	
	379 Car Hauler	
	384/386 with video	
	384/386 with Curved Windshield	
	387 (AM)	
	387 (OEM)	
	579	**9**
Sterling®	A-Line	**2**
	A-Line Car Hauler	
Volvo®	NonVolvo Engine	**2**
	Volvo Engine	
Western Star®	4900	**2**


Top of Windshield
A
B
Center Line
Notch in the Camera Bracket
"Torpedo" Level Rests on the Bracket Tabs
Left: Use only Bendix windshield adhesive when re-mounting a camera bracket.

During troubleshooting, if you need to check that the camera bracket is installed at the correct point on the windshield, use the Make/Model columns of the table (left) to find the Camera Location Code. The second table (below) shows the correct vertical and horizontal offset for each Code. Measure from the notch in the camera bracket to verify that the location is correct.

Camera Location Code	Horizontal Offset "A"	Vertical Offset "B"
1	9 ± 0.25 in.	2 ± 0.5 in.
2	6 ± 0.25 in.	2 ± 0.5 in.
3	9 ± 0.25 in.	3 ± 0.5 in.
7	7 ± 0.25 in.	3 ± 0.5 in.
8	7 ± 0.25 in.	2 ± 0.5 in.
9	6 ± 0.25 in.	2.5 ± 0.5 in.
10	8 ± 0.25 in.	2 ± 0.5 in.

* All trademarks shown here are the property of their respective owners and are used for reference only.

FIGURE 8 - ***CORRECT LOCATIONS FOR CAMERA MOUNTING BRACKETS***

3.0 TROUBLESHOOTING

3.1 GENERAL SAFETY GUIDELINES

Read and follow the General Safety Guidelines, shown on page 2 of this document.

3.2 DIAGNOSTIC TROUBLE CODES (DTCs)

Use a J1939 detection software to find the DTC code(s).

IMPORTANT

System Problems. If a problem with the AutoVue® LDW system by Bendix CVS is detected, it should be serviced as soon as possible to restore full functionality.

3.3 TABLE OF AUTOVUE® LDW SYSTEM DIAGNOSTIC TROUBLE CODES (DTCS)

Refer to the DTC(s) found and determine the action(s) to take.

Table of Diagnostic Trouble Codes (DTCs), Causes and Recommended Actions

SPN	FMI	DTC Name	Condition Found	Suggested Remedial Action(s)	Action to Clear the DTC
0084	**02**	**Vehicle's Speed Value Not Found**	The J1939 Data Bus speed value is not present.	• Check J1939 Data Bus connection. • Is the vehicle's J1939 Data Bus functioning? • If no problems were found during the checks above, replace the ECU and re-test.	The J1939 Data Bus speed value is present.
0084	**15**	**Vehicle's Speed Value is Out-of-Range**	The J1939 Data Bus speed value is outside the expected range.	• Check J1939 Data Bus connection. • Is the vehicle's J1939 Data Bus functioning? • If no problems were found during the checks above, replace the ECU and re-test.	The J1939 Data Bus speed value is within the expected range.
0628	**31**	**Bad Checksum Value**	The internal Electronic Control Unit (ECU) checksum does not match the calculated value.	• Replace the ECU and re-test.	A system reset is required.
0639	**02**	**J1939 Data Bus Not Found**	The ECU is not transmitting on the J1939 Data Bus.	• Check for damaged or reversed J1939 wiring. Check for corroded or damaged connectors and loose connections. Using procedures described by the vehicle manufacturer, verify the presence of the J1939 link. Check for other devices inhibiting J1939 communications. • If no problems were found during the checks above, replace the ECU and re-test.	The ability to successfully transmit on the J1939 Data Bus.

FIGURE 9 - ***TABLE OF DIAGNOSTIC TROUBLE CODES (PAGES 7-11)***

Table of Diagnostic Trouble Codes (DTCs), Causes and Recommended Actions					
SPN	**FMI**	**DTC Name**	**Condition Found**	**Suggested Remedial Action(s)**	**Action to Clear the DTC**
1703	**03**	**The Right Speaker is Shorted to Power**	The resistance from right speaker positive or negative output pins to power input is less than 10Ω during sound generation.	• Check the wiring between the right speaker and ECU. • Test by temporarily installing a known good speaker in the right speaker location. • If no problems were found with the wiring, and the test with a good speaker did not solve the problem, replace the ECU and re-test.	A system reset is required, and the resistance from right speaker positive or negative output pins to power input needs to be greater than 10Ω during sound generation.
1703	**05**	**The Right Speaker Has an Open Circuit**	Resistance between right speaker output pins is greater than 40Ω during sound generation.	• Check the wiring between the right speaker and ECU. • Test by temporarily installing a known good speaker in the right speaker location. • If no problems were found with the wiring, and the test with a good speaker did not solve the problem, replace the ECU and re-test.	System reset and the resistance between right speaker output pins is less than 40Ω during sound generation.
1703	**06**	**The Right Speaker is Shorted to Ground**	Resistance between right speaker positive or negative output pins and ground is less than 10Ω during sound generation. OR Resistance between right speaker positive and negative output pins is less than 7Ω during sound generation.	• Check the wiring between the right speaker and ECU. • Test by temporarily installing a known good speaker in the right speaker location. • If no problems were found with the wiring, and the test with a good speaker did not solve the problem, replace the ECU and re-test.	System reset and the resistance between right speaker positive or negative output pins and ground is greater than 10Ω during sound generation. OR System reset and the resistance between right speaker positive and negative output pins is greater than 7Ω during sound generation.
1704	**03**	**The Left Speaker is Shorted to Power**	Resistance from left speaker positive or negative output pins to power input is less than 10Ω during sound generation.	• Check the wiring between the left speaker and ECU. • Test by temporarily installing a known good speaker in the left speaker location. • If no problems were found with the wiring, and the test with a good speaker did not solve the problem, replace the ECU and re-test.	System reset and the resistance from left speaker positive or negative output pins to power input is greater than 10Ω during sound generation.

FIGURE 9 - ***TABLE OF DIAGNOSTIC TROUBLE CODES (PAGES 7-11)***

Table of Diagnostic Trouble Codes (DTCs), Causes and Recommended Actions					
SPN	**FMI**	**DTC Name**	**Condition Found**	**Suggested Remedial Action(s)**	**Action to Clear the DTC**
1704	**05**	**The Left Speaker Has an Open Circuit**	Resistance between left speaker output pins is greater than 40Ω during sound generation.	• Check the wiring between the left speaker and the ECU. • Test by temporarily installing a known good speaker in the left speaker location. • If no problems were found with the wiring, and the test with a good speaker did not solve the problem, replace the ECU and re-test.	System reset and the resistance between left speaker output pins is less than 40Ω during sound generation.
1704	**06**	**The Left Speaker is Shorted to Ground**	Resistance between left speaker positive or negative output pins and ground is less than 10Ω during sound generation. OR Resistance between left speaker positive and negative output pins is less than 7Ω during sound generation.	• Check the wiring between the left speaker and ECU. • Test by temporarily installing a known good speaker in the left speaker location. • If no problems were found with the wiring, and the test with a good speaker did not solve the problem, replace the ECU and re-test.	System reset and the resistance between left speaker positive or negative output pins and ground is greater than 10Ω during sound generation. OR System reset and the resistance between left speaker positive and negative output pins is greater than 7Ω during sound generation.

FIGURE 9 - ***TABLE OF DIAGNOSTIC TROUBLE CODES (PAGES 7-11)***

Table of Diagnostic Trouble Codes (DTCs), Causes and Recommended Actions					
SPN	**FMI**	**DTC Name**	**Condition Found**	**Suggested Remedial Action(s)**	**Action to Clear the DTC**
1705	**02**	**The Turn Signal Input Remains High**	Turn signal input is stuck at high level for more than three (3) seconds	• Check the wiring between the Electronic Control Unit (ECU) and the turn signal. • Verify that the common wire of the turn signal/brake lamp circuit was not used. • Replace any non-functioning turn signal bulb(s). • Test by temporarily installing a known good turn signal flasher. • Connect a test lamp or multi-meter to the turn signal wires one at a time (orange for left, white for right) and notice the state of the test lamp or the voltage readout on the multi-meter. With the ignition on, test and observe the following. 1. Readings should be off or 0v when the turn signal is off. 2. Readings should pulse to 12V when the turn signal is on. 3. If the signal pulses with both turn signals, turn the signal off before continuing. 4. Readings should be 0V when the service brake pedal is applied. 5. Readings should be 0V when the parking brake is disengaged. 6. Readings should be 0V when the headlights are ON. If the turn signal circuit does not pass any of the above tests you must relocate the turn signal connection. • If no problems were found with the wiring/bulbs, and the test with a good signal flasher did not solve the problem, replace the ECU and re-test.	Turn signal input is low for three (3) seconds.
1705	**03**	**The Input Voltage is Too High**	Input voltage is above 16V	• Measure the ignition voltage. Ensure that ignition voltage is not greater than 16 VDC. Check the vehicle battery and associated components. • Inspect for damaged wiring, damaged or corroded connectors and loose connections. Check the wiring between the ignition and the ECU. • If no problems were found during the checks above, replace the ECU and re-test.	Input voltage is below 16V.

FIGURE 9 - ***TABLE OF DIAGNOSTIC TROUBLE CODES (PAGES 7-11)***

Table of Diagnostic Trouble Codes (DTCs), Causes and Recommended Actions					
SPN	**FMI**	**DTC Name**	**Condition Found**	**Suggested Remedial Action(s)**	**Action to Clear the DTC**
1705	**04**	**The Input Voltage is Too Low**	Input voltage is below 9.5V	• Check the ignition voltage. • Measure the ignition voltage under load. Ensure that the ignition voltage is greater than 10 VDC (volts DC). Check the vehicle battery and associated components. Inspect for damaged wiring, damaged or corroded connectors and loose connections. Check the condition of the fuse. • Check the wiring between the ignition and the ECU. • If no problems were found during the checks above, replace the ECU and re-test.	Input voltage is above 9.5V.
1705	**05**	**The Enabled Lamp or Status Lamp Output Open**	Resistance from enabled or status output to ground is greater than 140KΩ while output is not energized.	• Check the wiring between the ECU and the switch or status lamp. • Test by temporarily installing a known good switch/status lamp. • If no problems were found with the wiring, and the test with a good switch/status lamp did not solve the problem, replace the ECU and re-test.	Resistance from enabled or status output to ground is less than 140KΩ while output is not energized.
		(Note: the green “enabled” lamp output will not illuminate if this DTC is present)			
1705	**06**	**Enabled Lamp or Status Lamp Output Short to Power**	Current into enabled or status output pin is greater than 4.5A while the output is energized.	• Check the wiring between the ECU and the switch or status lamp. • Test by temporarily installing a known good switch/status lamp. • If no problems were found with the wiring, and the test with a good switch/status lamp did not solve the problem, replace the ECU and re-test.	System reset and current into enable or status output is less than 4.5A while the output is energized.
		(Note: the green “enabled” lamp output will not illuminate if this DTC is present)			
1705	**31**	**Internal Failure**	Internal failure	• Check the camera cable. • Test by temporarily installing a known good camera. • If no problems were found with the cable and the test with a good camera did not solve the problem, replace the ECU and re-test.	Internal failure clears

For all other DTCs, or problems after re-testing a replacement ECU, contact the Bendix Tech Team.

For direct telephone technical support, the Bendix Tech Team is available at 1-800-AIR-BRAKE (1-800-247-2725, option 2) Monday through Friday, 8:00 a.m. to 6:00 p.m. ET. Follow the instructions in the recorded message.

The Bendix Tech Team can also be reached by e-mail at: techteam@bendix.com.

FIGURE 9 - ***TABLE OF DIAGNOSTIC TROUBLE CODES (PAGES 7-11)***

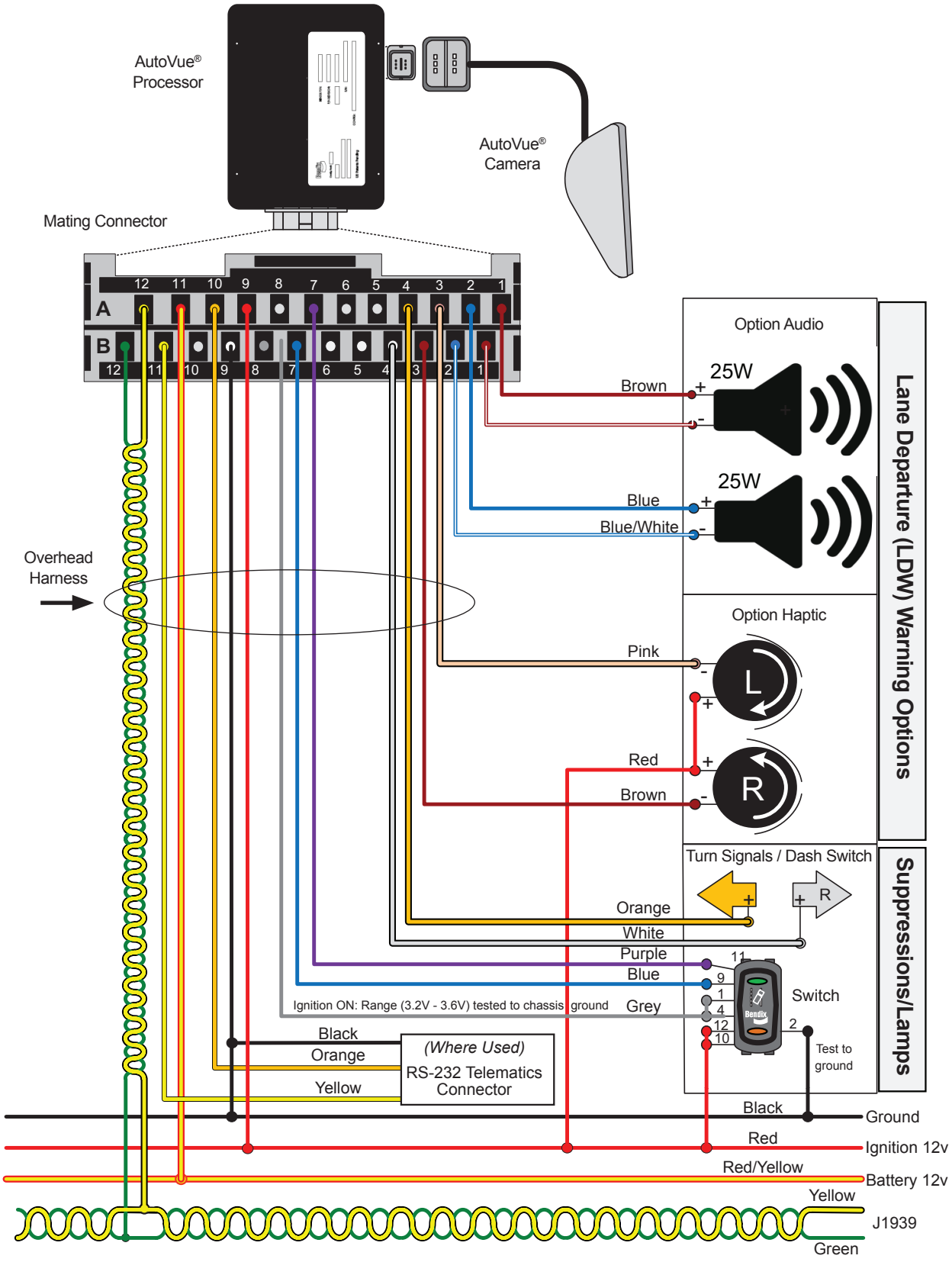


FIGURE 10 - *AUTOVUE® LDW SYSTEM BY BENDIX CVS - WIRING DIAGRAM*

3.4 ADVANCED TROUBLESHOOTING

Refer to the AutoVue® LDW system by Bendix CVS wiring diagram on page 12, during these procedures.

General. Inspect the camera and its lens, for any damage and the wiring for any pinching or cuts. If a camera bracket appears to have been reinstalled, check if the bracket is level by removing the camera (slide upwards), and use a torpedo level on the bracket tabs *(See Figure 8, on page 6)*. Note that the other vehicle cab accessories must be carefully installed since mounting screws, etc. that penetrate locations where the AutoVue components or wiring are routed can cause shorts or wiring breaks.

If you do not have the capability to read the J1939 error codes it is recommended to, in turn swap out components with known good system components in the following order: switch; processor; camera.

In practice this would result in:

- Temporarily replace the switch with a known good switch, retest. If this does not correct the problem put the original switch back in.
- Temporarily replace the processor box with a known working unit. If this does not correct the problem put the original box back in.
- Temporarily replace the camera with a known working unit. If this does not correct the problem put the original camera back in.

If after temporarily replacing all the major components the green lamp still fails to illuminate, hardware issues have been eliminated and the technician can focus elsewhere (wiring, mis-installation, etc.) for the source of the problem.

Confirm the processor part number:

Potentially a processor may have been programmed for one vehicle model but was mis-installed or moved to a different vehicle model. Call Bendix to verify that you have the correct processor part number on the vehicle.

In cases where — after start-up — an Enable/Disable switch is pressed but the "enable" (green) and "status" (amber) lamps remain on:

1. Conditions: Vehicle parked, with the ignition on. Using a voltmeter connect the positive (+) lead to gray wire and the negative lead (-) to a good chassis ground, do not use the black wire on switch for ground.
2. The voltage reading should be between 3.2 V to 3.6 V.
3. Using a voltmeter connect the positive (+) lead to the switch pin black wire and the negative lead (-) to a good chassis ground.
4. The voltage reading should be between -0.10 V to 0.1 V.
5. If the above voltages are not correct, turn off the ignition and remove the switch from the switch socket.
6. Using an Ohmmeter, connect the positive (+) lead to the gray wire, and the negative lead (-) to a good chassis ground, do not use the black wire.
7. The resistance reading should be between 30k Ohms and 70k Ohms.
8. If the resistance reading is less than 30k Ohms, disconnect the main connector from the processor and recheck the resistance of the gray wire. If the resistance is still less than 30k Ohms, then a short may exist in the wiring harness (for example, a screw may have been driven in to the wire).
9. If the resistance reading is greater than 70k Ohms, an open circuit may exist in the wiring harness.
10. Using an Ohmmeter, connect the positive (+) lead to the black wire and the negative lead (-) to a good chassis ground.
11. The resistance reading should be less than one (1) Ohm.
12. If the resistance reading is greater than one (1) Ohm, an open circuit may exist in the wiring harness.
13. If the above voltages are correct, turn off the ignition and remove the switch from the switch socket.
14. Using an Ohmmeter, connect the positive (+) lead to blue wire and the negative lead (-) to a good chassis ground, do not use the black wire.
15. The resistance reading should be greater than 10k Ohms.
16. Using an Ohmmeter, connect the positive (+) lead to violet wire and the negative lead (-) to a good chassis ground, do not use the black wire.
17. The resistance reading should be greater than 10k Ohms.

In cases where — after start-up — an Enable/Disable switch is pressed but the "enable" (green) lamp remains on and the "status" (amber) lamp does not remain on:

1. Conditions: Vehicle parked, with the ignition on, and all LDW components (camera, processor, & switch) are connected.
2. Turn off the ignition and remove the switch from the switch socket.
3. Using an Ohmmeter, connect the positive (+) lead to blue wire and the negative lead (-) to a good chassis ground, do not use the black wire.
4. The resistance reading should be greater than 10k Ohms.

5. If the resistance is less than 10k Ohms, then disconnect the main connector from the processor and recheck the resistance on the blue wire. If the resistance is still less than 10k Ohms then a short may exist in the wiring harness (a screw may have been driven in to the wire). If the resistance is greater than 10k Ohms then temporarily replace the processor with a known good unit and re-test.
6. Reconnect the main connector to the processor and recheck the resistance on the blue wire. If the resistance is greater than 10k Ohms then temporarily replace the processor with a known good unit and re-test

3.5 CLEARING DIAGNOSTIC TROUBLE CODES (DTCS)

Once the problem has been found and resolved, clear the AutoVue® LDW system Diagnostic Trouble Codes (DTCs) by cycling the ignition power.

ADDITIONAL SUPPORT AT WWW.BENDIX.COM/1-800-AIR-BRAKE (1-800-247-2725, OPTION 2)

For the latest information, and for free downloads of the Bendix® ACom® Diagnostics software, and its User Guide, visit the Bendix website at: www.bendix.com.

For direct telephone technical support, the Bendix Tech Team is available at 1-800-AIR-BRAKE (1-800-247-2725, option 2) Monday through Friday, 8:00 A.M. to 6:00 P.M. ET. Follow the instructions in the recorded message.

The Bendix Tech Team can also be reached by e-mail at: techteam@bendix.com.

APPENDIX A - SAFETYDIRECT® BY BENDIX CVS

Appendix A
SafetyDirect® by Bendix CVS

SAFETYDIRECT® FUNCTION

When the SafetyDirect function is enabled, the AutoVue® LDW system processor has the ability to collect relevant driver and vehicle performance data via the LDW system and the J1939 CAN Bus. When a trigger event occurs, vehicle data and, in some cases, video, is saved in the system for later download via the vehicle telematics system.

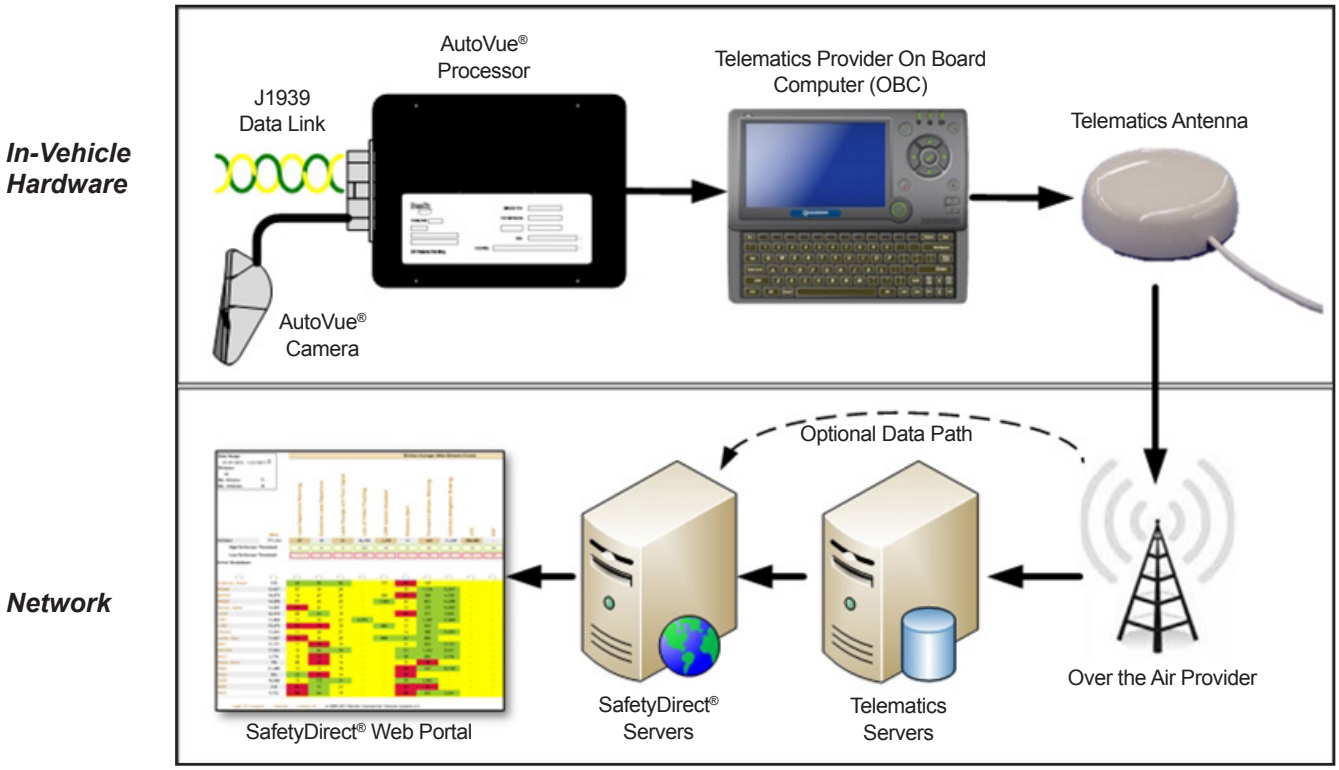


FIGURE 11 - *AUTOVUE® LDW SYSTEM COMMUNICATION WITH SAFETYDIRECT® BY BENDIX CVS*

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